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LEVELING ATTACHMENT FOR EARTH CARS.

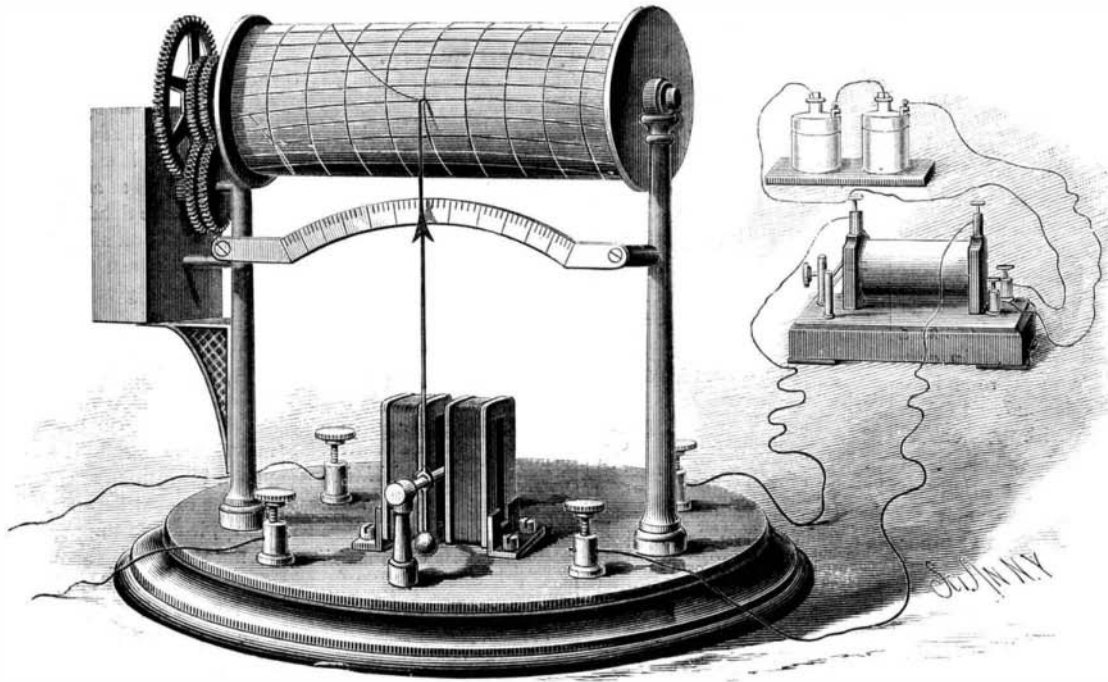
Our engraving represents a simple and effective attachment for leveling the earth dumped from the cars of a construction train. The car carrying the apparatus must of necessity be the last in the train, and as it is moved forward, all of the earth discharged by the train is very quickly leveled, saving a great deal of manual labor and doing the work more perfectly than it can be done in the ordinary way.

Fig. 1 is a perspective view of the apparatus in working order; Fig. 2 is a partial plan view; and Fig. 3 is a detail view of the pawl and ratchet which holds the parts in working position.

To the forward end of a platform car are attached two strong wings, A, which are constructed either entirely of iron or of wood iron clad. The pivots upon which these wings turn are made rigid by braces, and each wing is supported by two horizontal braces, B, carrying racks, which are engaged by pinions whose shafts, C, are journaled in the body of the car, and provided with a pawl and ratchet for holding them in any desired position. The forward braces, B, are each provided with a pinion, pawl, and ratchet, while the rear braces are operated by a pinion common to both. All of the pinion shafts are squared to receive a socket wrench provided with a wheel by which the shaft may be turned so as to spread the wings as much as may be required, when they will be held by the pawls and ratchets, and the earth on each side of the track will be spread out and leveled as the car is drawn forward after the discharging of the train. As soon as the leveling is completed the wings are drawn closely against the car,

and the wrenches are removed when the car is used like any other flat car.

The wings are arranged so that they may be readily removed from one end of the car and attached to the other. The forward end of the wing is inclined inward toward the middle of the track, so as to remove the earth from the vicinity of the track and from the ends of the ties.



RECORDING GALVANOMETER.

NEW RECORDING GALVANOMETER.

BY GEO. M. HOPKINS.

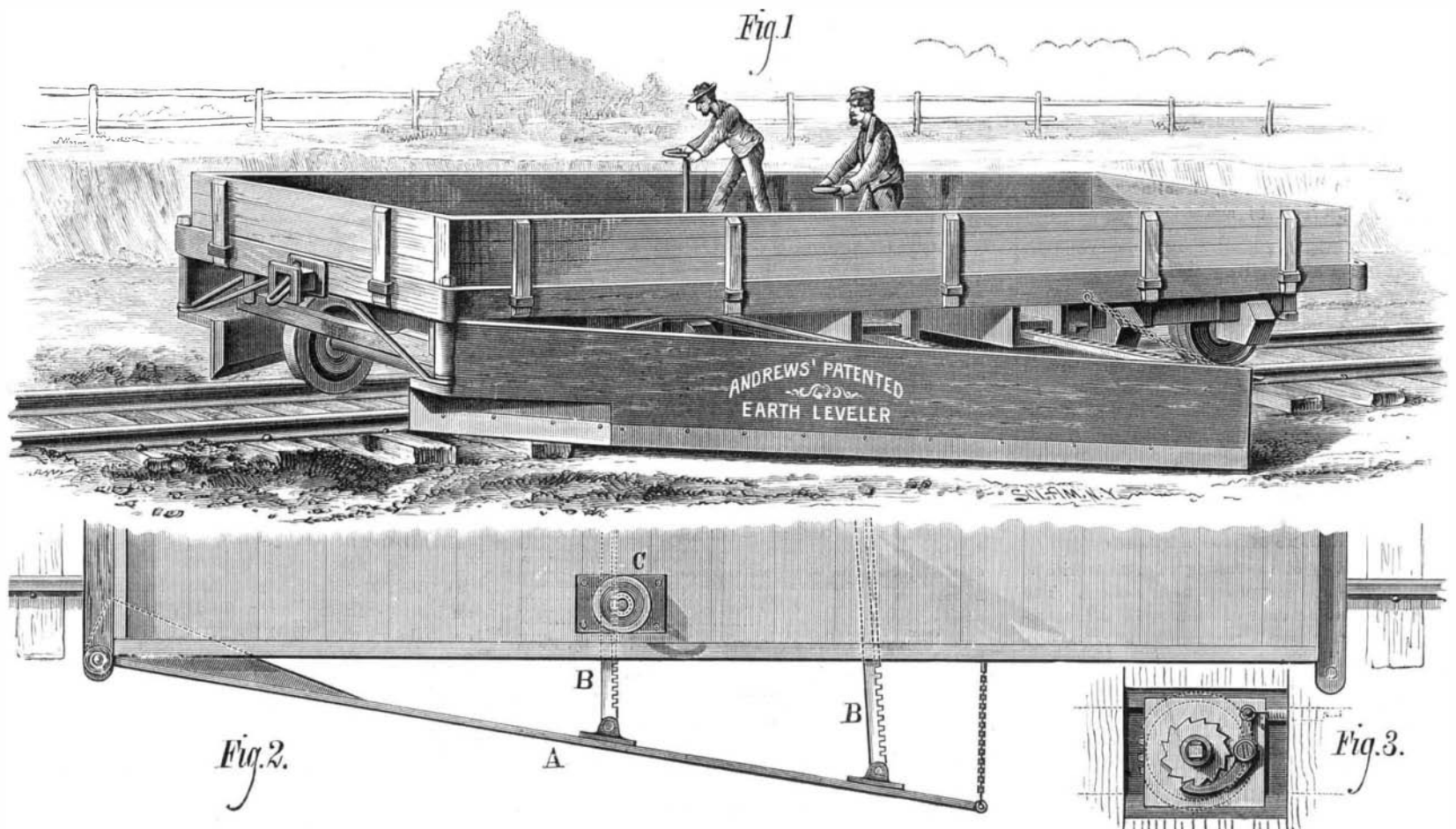
In making galvanometric tests it is often desirable to consider the element of time, but, as every electrician knows, to do this with the ordinary appliances is tiresome, and the result is liable to be inaccurate.

The extreme delicacy of the action of the galvanometer renders it difficult to apply to it any device capable of recording the movements of the needle without interfering more or less with its action. Only two methods of making the record have presented themselves to the writer—one contemplates the use of photography; the other, the application of a disruptive spark from an induction coil. The former is considered too slow; the latter has been adopted and applied to an ordinary vertical galvanometer in the manner indicated in the engraving. The helixes are wound with rather coarse wire (No. 22). The needle is astatic, the inner member swinging in the central opening in the helixes in the usual way, the outer member being located behind the helixes. The arbor supporting the needle has very delicate pivots, and carries a long aluminum index, which is counterpoised so that it assumes a vertical position when no current passes through the helixes, and the needle is unaffected by terrestrial magnetism.

This invention, in the construction and repair of railroads, must prove a valuable acquisition to the means already in use for facilitating the heavy work of railroad construction.

Further information may be obtained by addressing the patentee, Mr. James Andrews, of Biddeford, Me.

The upper end of the index swings in front of a graduated scale, and is prolonged so as to reach to the middle of the cylinder carrying a sheet of paper upon which the movements of the needle are to be recorded. This cylinder is of brass, and its journals are supported by metal columns projecting from the base upon which the other



ANDREWS' LEVELING ATTACHMENT FOR EARTH CARS.